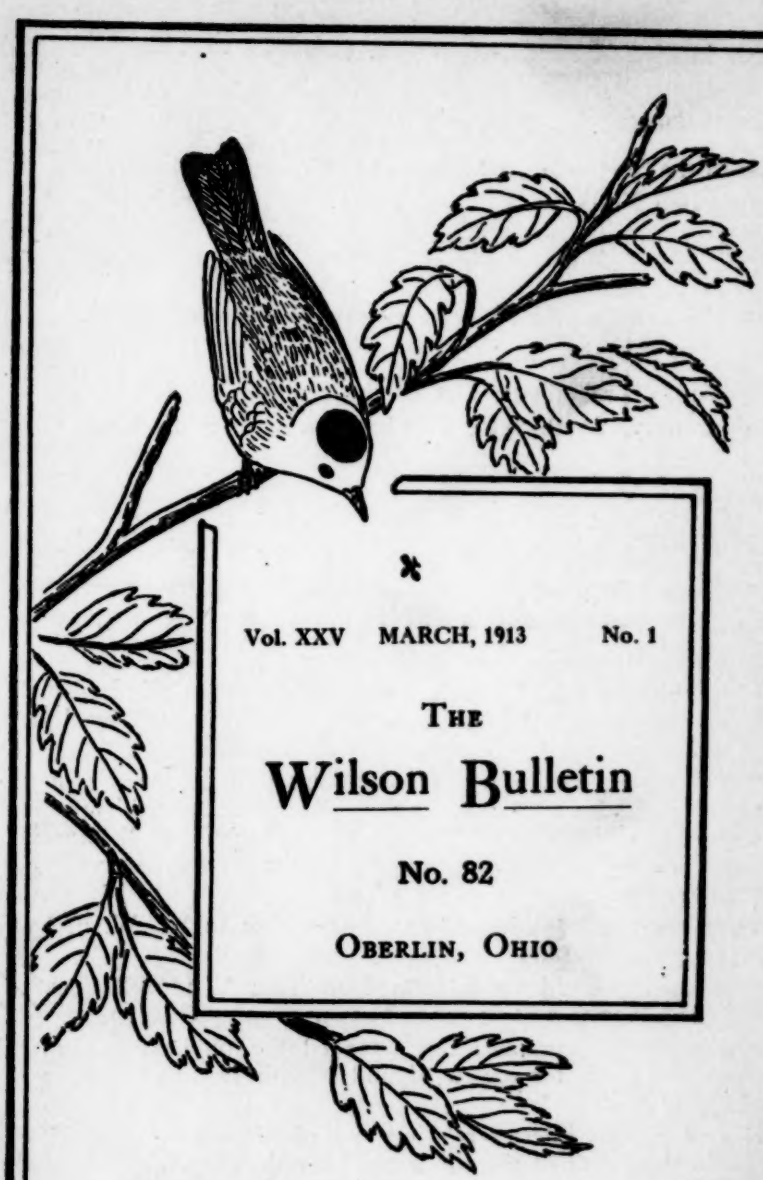

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VARIATIONS IN BIRD MIGRATION FROM YEAR TO YEAR.

BY WELLS W. COOKE.

The records of the Weather Bureau show that the average temperatures of the three spring migration months — March, April and May — vary very considerably from year to year. In some years all three months are below normal. In other years the whole season averages above normal. If the birds depended to any considerable extent on temperature to indicate to them the proper time for migration, their movements should vary up and down with these great changes in average temperature. If on the other hand the later theory is correct that the departure from the winter home has no connection with the weather, and that the *average* temperature at the *breeding grounds* is the principal factor that determines the time and speed of migration, then it should follow that local variations in temperature should have only a slight influence in varying the dates of arrival from year to year.

The latter assumption is borne out most strikingly by a long series of careful migration observations. They show that the average of migration at any locality for the entire season as compared with the average for other years is remarkably uniform. The migration arrivals in any given week may be much retarded by a great storm or a long spell

of exceptionally warm weather may induce the birds to arrive somewhat earlier than usual. But these variations from week to week largely balance one another and the average dates of arrival for the whole season show from year to year very slight variations.

Thus at Lanesboro, Minn., the average date of arrival for the ten years, 1884-1893, is 144.8 days after January 1; the variations are: 1886, 0.2 days late; 1887, 0.3 days early; 1888, 0.7 early; 1889, 0.4 early; 1890, 1.2 days late. The average variation is 0.6 days, and the maximum variation, 1.9 days, from 0.7 days early to 1.2 days late. The year 1885 is 1.9 days late, but there are evidences in the notes that this is due to lack of time in the field on the part of the observer rather than to actual variation by the birds.

The same test was made of the migration dates from Keokuk, Iowa. The year 1892 is 1.0 day earlier than the average; 1893, 0.1 day later; 1894, 1.7 days late; 1895, 0.8 days early; 1899, 0.5 days early; 1900, 0.5 days late. The extremes of variation are 2.7 days and the average variation 0.9 days.

Grinnell, Iowa, shows much the same: 1885, 0.7 days late; 1886, 0.2 days late; 1887, 0.7 early; 1888, 0.6 early; 1889, 0.1 late; 1890, 1.0 late; average variation only 0.5 days; maximum variation, 1.7 days from 0.7 days early to 1.0 day late.

The averages for Aweme, Manitoba, are: 1898, 1.2 days late; 1900, 0.2 days late; 1901, 0.8 early; 1902, 0.8 early; 1903, 0.2 days late; average variation 0.6 days; maximum variation, 2.0 days from 0.8 days early to 1.2 days late. The records for 1899 are omitted because that year the observer could not devote the usual time to the work and the average is several days late.

The records just given include the work of four observers in four widely separated towns during fifteen different years and hence ought to be a fair test. The remarkable agreement of the results is a strong indication that they represent the actual movements of the birds. The twenty-one series of observations give a maximum range of 2.5 days from 0.8

days early to 1.7 days late, with an average variation of 0.7 days. That is to say the whole migration of different years may vary as much as two and a half days, between the earliest spring and the latest, but the probable variation is less than a day. Or to say the same thing in another way, the notes of a first-class observer in any one year will give an average that probably will not vary more than two-thirds of a day from the date that would be obtained for that locality as the average of long years of observation.

The figure 2.5 days for the maximum variation is the sum of two variables — the actual variation of the birds in their times of arrival and the variation in the amount of time and care that the observer can give to the work in the different years. The fact that the sum of these two variables is so small shows both the extreme uniformity of the birds in their migrations and the very careful and accurate work done by the four observers whose notes were selected for the test.

The above may be summarized by saying that the migration of birds as a whole is remarkably uniform. A season may start out early or late and quite wide variations may occur in the times of arrival of any one species, but in the course of the whole season's migration, these extremes nearly balance and the result is very small net variations.

The dates of arrival of individual species show considerable variation between the extremes of early and late arrival, but the average variation from the mean date of arrival is surprisingly small. To arrive at a mathematical statement of this variation thirty-six species were selected, which are easily noted, and are common enough so that they would ordinarily be seen as soon as they arrive. The records at Lanesboro, Minn., for the six years 1885-1890 were used and there should therefore have been six times 36 records or 216 in all. Six of these records were lacking, while eight records were rejected because too early to show the ordinary movements of the species, and ten more because they were so late as to indicate that the species was overlooked on its arrival. Thus 18 records, or 9 per cent, were rejected.

The remaining records show an average extreme variation of 10.0 days between the earliest and the latest dates of arrival for each species, with an average variation of 2.9 days from the normal date of arrival.

The records of these same thirty-six species for the same six years at Grinnell, Iowa, after rejecting 13 per cent because too late or too early, show an average extreme variation of 9.4 days and an average variation of 3.4 days from the normal date of arrival. The records from Lanesboro are thus seen to be a trifle more regular than those from Grinnell. As it is hardly supposable that the birds themselves are more variable in one of these places than the other with such closely similar physical surroundings, it must be that this difference is due to differences in ability or opportunity on the part of the observer. In this particular case it is probable that the two observers knew birds about equally well, but the Lanesboro observer was so situated that he could spend more hours per day in the open air than the observer at Grinnell, with the result that he averaged seeing the birds a little sooner after their arrival.

These final averages of 2.9 and 3.4 days represent the probable variation in the observance of the arrival of the first, or in other words a first-class observer, who is in the field every day and is able to spend time enough each day to cover his neighborhood satisfactorily will make records that show an average variation from the normal date of arrival of about three days, and unless extreme attention is paid to the birds another half day will be added. This time — three days — is the sum of two variables, first, the variations due to the birds themselves as they vary their actual date of arrival from year to year; and second, variations due to failures on the part of the observer to note the species immediately on its arrival. Since the second of these causes must have some influence it follows that the birds themselves must be remarkably uniform in their spring movements.

The above investigation was undertaken for the purpose of obtaining some standard that could be used in testing mi-

gration reports. The Biological Survey during the past twenty-five years has received reports from more than two thousand different persons and it must needs be that this large number would include observers good, bad and indifferent. A large part of the most exacting work of the present writer for the past ten years has been the examining of these thousands of reports and separating the wheat from the chaff. No better single basis for a judgment has been found than the above three-day variation. It received a striking confirmation in a very extended set of records that were received from Raleigh, N. C. In some twenty years of records about half the years showed small variations, while the other years gave less regular results even to a fifty per cent increase in the amount of variation. Later the observer sent his original notes and diary and they showed conclusively that the variations were inversely according to the amount of time spent in the field. The more days a month and the more hours a day devoted to hunting for new records, the more regular the records obtained.

Conversely if an observer in a level district sends notes with wide variations it is certain that some of his records are not representative of the normal movements of the birds and extra care must be taken to ascertain which notes should not be used.

During all these years, as would be expected, there has been some nature-faking in the reports. The percent of spurious records has been very small and they have varied from the crude impossibilities of ignorance to the carefully worked out report of a person well up in birds and bird migration. But they can be detected with ease when the above rule is applied and they are compared with genuine records from neighboring districts. Either the variations will be too small — the dates more regular than the actual movements of the birds, or if they have taken pains to vary the dates they have placed the wider variations on the wrong birds, since species differ widely in their normal variations. It would probably astonish some of these nature-fakers if they

could see the comments that have been entered on their reports.

But to return to the original subject. The average variations of 2.9 and 3.4 days already mentioned are the average for the whole spring migration period of March, April and May, but birds are much more variable during the early part of the season when March storms interfere with their uniform northward progress. The average variation from the normal date of arrival at Lanesboro is for March, 4.0 days; April, 2.7 days, and for May, 2.6 days. At Grinnell the same averages are for March, 3.6 days; April, 3.6, and May 2.9 days. The average of the two places is for March, 3.8 days; April, 3.1, and May 2.7 days. The average extremes, that is, the difference between the earliest and the latest record for each species is at Lanesboro, for March, 12 days; April, 9 days, and for May, 8 days. At Grinnell, March, 10 days; April, 10 days, and May 9 days. Average of the two places for March, 11 days; April, 9.5 days, and for May, 8.5 days.

When the records of single species are considered of course the variations are much larger. The earliest ducks and geese migrating in the unsettled weather of the breaking up of winter show the widest variations, as will be seen from the following table of the movements of the Canada Goose.

SPRING ARRIVAL OF THE CANADA GOOSE.

PLACE	Number of years of observation	Average date of normal arrival	Extreme differences between normal date of arrival and recorded date of arrival	Differences between extremes of recorded dates of arrival	Average differences between normal date of arrival and recorded date of arrival
			DAYS	DAYS	DAYS
Nebraska, lat. 40°30'...	14	February 21	+9 to —34	43	10
Iowa 41°	9	February 24	+9 to —39	48	14
Iowa 42°	15	March 4	+6 to —31	37	12
Minnesota 43°°	8	March 18	+2 to —23	25	10
North Dakota 47°°.....	11	March 27	+5 to —28	33	10
Manitoba 50°	15	April 6	+6 to —23	29	9
Average				36	11

The table shows that the early geese are very variable in their movements; that early migrants sometimes appear a full month before the usual time of arrival, and that extreme variations in different years amount to a month and a half. Attention is called to the last column, which is the "probable error" in records of the arrival of the Canada Goose and means that when a good observer sees the first goose of the season, the probability is that the date is within nine to fourteen days of the normal date of arrival for that district. With such wide variation, a large series of observations is necessary to establish a reliable normal for any given locality.

The extremes of variation are considerably greater in the district just north of the winter range, since with these hardy birds, a few warm days may tempt them north even in January, and in mild winters, like those of 1888-9 and 1889-90, geese may be seen every few days all winter, many miles north of the usual winter abode. When it is remembered that the probable error in the date of arrival of the late migrants is hardly more than three days, it will be understood how great an influence the changeable spring weather has on the early migrants.

Birds differ quite decidedly in their tendency to vary the date of their arrival. The extreme is found in the Canada Goose just mentioned, which has an average variation of 11 days from the normal date of arrival. At Lanesboro and Grinnell, the birds showed the following as their average variations from the normal time of appearance.

Phœbe	4.9 days	Ruby-crowned Kinglet	2.1 days
Black-poll Warbler	4.9 "	Chipping Sparrow	2.1 "
Bluebird	4.0 "	Wood Thrush	1.8 "
Meadowlark	4.1 "	Chimney Swift	2.0 "
Bronzed Grackle	3.7 "	Kingbird	2.0 "
Whippoorwill	4.0 "	Baltimore Oriole	2.1 "
Purple Martin	3.9 "	Black-billed Cuckoo	2.0 "
Robin	2.5 "	Ovenbird	1.4 "

Thus the Canada Goose and the Ovenbird represent the extremes — the one eight times as variable as the other.

AUTUMN BIRDS IN ALCONA COUNTY, MICHIGAN.

BY J. CLAIRE WOOD.

We will begin a brief sketch of Alcona County, Michigan, with the statement that between fifteen and twenty years ago the region about the village of Lincoln was a vast primeval forest of white pine and some Norway. Old residents speak of driving about beneath these great trees, there being no undergrowth. They covered the hill tops and slopes, but were replaced in the swampy valleys and low coast lands by hemlock, spruce, cedar and deciduous softwood, growing in a black muck. Near Lake Huron were belts of hard wood, and west of Hubbard Lake an open, sterile, sandy region of which Jack pine, scrub oak and sweet fern are characteristic plants, but the bottom lands differed little from other portions. The entire pine and hardwood forest has been cut away, except a few small pieces of the latter. The majority of pine stumps stand to-day and are a detriment to agricultural development. From measurements taken, the general run are approximately thirty inches in diameter and some exceed sixty inches. The general aspect of this pine section at the present writing is stumps and logs, with an occasional limbless tree trunk extending into the air. Every stump and stub is blackened by fire, which has ravaged the region more than once and destroyed nearly all of the fertile surface soil, and over it all is a growth of young poplar and some birch. The cultivated area lies mainly east and south of Lincoln, where we find the soil rather poor, as a whole, but with excellent patches where the hardwood existed or the humus was not destroyed by fire.

The village of Lincoln is located on the east and west center line of the county and seven miles inland from Lake Huron. It claims a population of 200 souls and an approximate area of one square mile, the south half of which is in the southeast corner of Hawes and the remainder in the northeast corner of Gustin Townships. In the easterly portion of the north half is Brownlee lake, nearly half a mile north and

south by a third less east and west. In the northwesterly portion of the south half is East Twin lake, about three-quarters of a mile east and west by a third less north and south; the other twin lying just west of it. The village lakes are separated by a high sand ridge, the nearest point between them being some 300 yards. The village dwellings are mainly clustered on the southerly side of this ridge just east of Twin lake. An abandoned railway grade runs east from the village on the line between Harrisville and Haynes Townships. The latter township is on the north side and the first two miles in sections 31 and 32, respectively, while the first mile of Harrisville Township is in section 6. One-quarter mile from the village we come to low ground covered with second growth swamp maple, birch, poplar, etc., with a scattering of hemlock and small tamarack. This low land is nearly all south of the grade, or in section 6, and reaches nearly to Crystal lake, which is just north of the grade and about half a mile from the village. This lake is about one-third of a mile east and west by slightly less north and south and one-third of a mile east of it is "mud pond," some 600 feet east and west by 400 feet in width. Along the northwest margin of Brownlee lake is a small woods of hemlock, arbor vitae, etc., with a few hardwood on the higher ground. On a hill one-half mile north of the west half of the village is some thirty acres of genuine hardwood forest, mostly beech, oak and maple, abundant in the order named, and extending northeasterly from this woods are lowlands, densely covered with small hemlock, pine, spruce, arbor vitae, yellow birch, etc. The southwest corner of the village touches some eighty acres of lowland similar to the above, except that it contains a solid ten-acre patch of tall tamaracks. This lowland is separated from East Twin by a ridge running east the length of the lake and thence southeast. There is quite a valley between this ridge and the one supporting the building section. This was formerly a cedar swamp, but is now covered with low bushes and thick weeds. The ridges are more or less under cultivation, but in most cases with the stumps still standing. From the high point

in the village all directions, far or near, terminate in the prevailing county scenery of stumps, stubs and second growth. The village lakes are mainly surrounded by second growth growing from the water and a dense blue-berry growth surrounds "mud pond" in a similar manner, while Crystal lake is encircled by a beach of white sand. The village lakes are said to be shallow and Crystal over a hundred feet deep, but none of these bodies of water show plant life above the surface. Fish have been introduced into these lakes with poor success; doubtless, in part owing to absence of suitable aquatic plant life. From Lincoln to the Backus hotel, at the south end of Hubbard lake in Sec. 2, Hawes Township, is six and one-half miles west and four and one-half north; thence the lake extends north seven miles to the county line, with an east and west width of about three miles and a stated depth of ninety-seven feet. The water shed here is towards the north. Sucker creek flows northwest from the vicinity of Lincoln and West Branch river flows northeast, both entering the lake at the south end, while the outlet is Hubbard river at the north end, which flows nearly due north for eighteen miles. Sucker creek was not visited, but West Branch enters the southwest corner of the lake in Sec. 3. It narrows from eighty feet in width at the lake to thirty feet one mile inland and is a very crooked channel of clear water through inundated lands caused by a dam across the outlet of Hubbard lake, which has raised the water level some three or more feet. Entering West Branch from the lake we pass through tamarack forest, gradually changing to white elm, red maple, black ash, etc., but all killed by the overflow and imparting a dreary aspect, enhanced by the rushes that are spread through the woods from the channel bank. Yellow perch, black bass and pike are the common Hubbard lake fish and brook trout abound some six miles from the lake in West Branch, as doubtless up the Sucker and other streams. Some half dozen farms begin one mile west and north of Lincoln and extend west on both sides of a road and this is spoken of as "the settlement." The foregoing briefly depicts

the topographical features of the country covered by our ornithological observations and is deemed advisable as a key to the localities mentioned in the appended list and because of its being in a stage of transformation.

We arrived at the village of Lincoln on the evening of October 5, 1912, and remained there until the 13th of November, with the exception of one week beginning October 13, which was spent at Hubbard lake. Bird study was not the object of our trip, but it developed that we were able to devote a portion of each day to that purpose and in consequence the following list presents a fairly accurate estimate of avian conditions during the period of our stay. Comparing with any section of southeastern Michigan we find Alcona County deficient both in the number of species and individuals and also in the flora, but it is doubtless the richer in the mammalia. Without hunting for them we saw Chipmunk, Red Squirrel, Northern Hare, Badger and Porcupine, while Virginia Deer and one Black Bear were shot and brought to Lincoln. The bear was taken in Mitchell Township, about fifteen miles west of Lincoln, and during the season about twenty deer were taken within that distance from the village. The absence of Siskins and Red-polls and scarcity of diurnal raptores were certainly surprises. A Buteo and Accipiter were seen in the swamp east of the village on October 10, a Buteo while driving to Hubbard lake on October 13, and another at the lake on the 16th. These five hawks were apparently the last of the autumn migration, but down in Wayne county the southward movement is not entirely concluded until December, and a few remain throughout the winter; this, of course, refers to those species that winter mainly south of Michigan. In Alcona County there is doubtless a definite route of migration near the shore of Lake Huron, and with access to this section we probably could have added a few species to our list. Over the territory we visited there was a general southward movement, while Pipits and Horned Larks were seen passing south over the dwelling section of Lincoln only and there was a westerly movement through the second

growth along the south shore of Hubbard lake and thence southwest up the West Branch river. We daily saw Blue Jays following this route, and also other birds, including the first Robins we noticed in the county. Four birds were found that have not been taken in Wayne County, namely, the American Scoter, the Arctic Three-toed and Northern Hairy Woodpecker, and the Horned Lark. Of these, the first is of no especial interest as all the Scoters occur in flocks on Lake Erie and undoubtedly stray into the lower Detroit River.

The Three-toed Woodpecker we welcomed as a pleasant reminder of bygone days in coniferous forests. Though of minimum size the Northern Hairy Woodpecker was noticeably larger than the more southern form in Wayne County. The Fourth Provisional Zone Map of North America assigns Alcona County to the Canadian Zone, though it more properly belongs to the upper Transition. It was never entirely Canadian and now the pine forests are gone and a more southern fauna and flora have penetrated the county and spread with its agricultural development. However, probably no change has affected the local Hairy Woodpeckers and we find them less than the dimensions of typical *leucomelas,* but in our opinion of that form, though the specimens we examined may have been transients from further north rather than local breeding examples. The greatest pleasure of all, however, was in finding the Horned Lark, as we had not previously seen it in life. There are no records for southeastern Michigan, nor did Messrs. Swales and Taverner find it at Point Pelee; in fact, it is considered rare as far east at least as Toronto, Canada, and Erie County, Pennsylvania, according to the bird students who back their records with actual specimens on hand, but it has been reported as more or less common over this entire region. In Michigan it has been found abundant during the autumn migration on Isle Royal in 1905 and tolerably common in Houghton County and the Charity Islands, Saginaw Bay, in 1910. With the exception of an approximate dozen specimens in collections this is all we knew of its distribution in the state prior to finding it at

Lincoln. Accepting the geographical areas assigned the subspecies, we find that Michigan is south of the easterly breeding range of *hoyti*, but instead of that form the representative northern transient is typical *alpestris* that breeds in east-Labrador and the coastal region just south of it. As the east Hudson Bay form is approximately *alpestris*+*hoyti* and the rarity of *alpestris* at Toronto precludes the possibility of its reaching Michigan along the natural course of the St. Lawrence River and northern shores of Lake Ontario and Lake Erie, we suggest a hypothetical overland route from the northern half of Labrador to Lake Superior and the St. Mary's River and thence south through Michigan and possibly into southwestern Ontario by way of St. Clair County. However, subsequent data may change all this and even now we are ignorant of the spring migration and know *hoyti* only as a straggler, which is doubtless incorrect. The status of the two forms in the state may never be determined owing to the steadily increasing opposition to the killing of birds by a class who are grossly ignorant of everything pertaining to science.

1. *Columbus auritus.*—Horned Grebe. This was the only species of grebe on Hubbard Lake and none were seen elsewhere. In calm water it was difficult to approach, but when the waves were running high the rapidly moving launch seemed to confuse it and it would endeavor to escape by flying towards the shore instead of diving. Under these conditions Mr. Love shot three females; the first from a flock of four on October 16, the second from a flock of five on the 17th, and a single bird on the 18th. A pair entered the West Branch on October 14, but escaped to open water at the report of a gun.

2. *Podilymbus podiceps.*—Pied-billed Grebe. We noticed one on each village lake on October 8 and there continued to be one on each lake until we left for Hubbard lake on the 13th. Doubtless the same individuals were seen each day. They were wary and kept beyond gunshot range of the shore. There was a grebe on East Twin lake on October 31 and another on Brownlee lake on November 7, which we believed to be of this species.

3. *Larus argentatus.*—Herring Gull. From one to eight were daily seen on Hubbard lake. In calm weather they would for hours perch upon the snags projecting above the water, but preferred to sail about in brisk winds and devoted much time to

watching the surf for food washed ashore. Four gulls of this species thus occupied were seen at Lake Huron in the city of Harrisville on October 27.

4. *Mergus americanus.*—Merganser. Two adult males flew east over the village dwellings on October 10 and another two passed west over the same route on November 5. They did not patronize the local lakes and were doubtless passing between Lake Huron and Hubbard lake.

5. *Lophodytes cucullatus.*—Hooded Merganser. On October 17 we explored Hubbard lake in a launch and flushed six small flocks of this merganser. We examined five females shot by sportsmen on the lake October 20.

6. *Nettion carolinense.*—Green-winged Teal. An adult female was secured on the West Branch on October 20.

7. *Marila americana.*—Red-head. A flock of seven appeared on Hubbard lake on October 18 and a female was secured.

8. *Marila affinis.*—Lesser Scaup Duck. A pair came from the west and dropped into Brownlee lake on October 8, where they remained three days. On October 14, among the ducks driven into the West Branch by the rough sea on the lake were six of this species. A male and two females were on "mud pond" November 7 and flew east when flushed.

9. *Charitonetta albeola.*—Buffle-head. Small flocks were on the West Branch on October 14 and later were scattered about the lake, where three females were taken on the 18th. A female was shot on Brownlee lake November 2 and a pair noted there November 5.

10. *Oidemia americana.*—Scoter. The three species of scoters were of similar habits and differed from the other ducks on Hubbard lake by preferring the deep water and remaining there in spite of the roughest seas we experienced. On October 14 we came upon a flock of *americana* consisting of two pairs and secured a female. Mr. Love secured a female on the 16th, while a pair was seen on the 17th and two females were secured on the 20th.

11. *Oidemia deglandi.*—White-winged Scoter. A flock of eight was flushed on October 14 and a single male on the 16th. This species was more wary than *americana* and none were secured. The white wing patch is very conspicuous in the dark plumage of the adult male while in flight.

12. *Oidemia perspicillata.*—Surf Scoter. We had the pleasure of examining a female secured on Hubbard lake by Mr. Love on October 13. The bird allowed him to approach within gunshot range, when it dove and reappeared nearer the boat.

13. *Branta canadensis canadensis.*—Canada Goose. During the last week in October a deer hunter shot one from a flock about

eight miles west of Lincoln and brought it to the village. We saw none and were informed that they seldom alight in the county.

14. *Gallinago delicata.*—Wilson's Snipe. Three were flushed in the swamp south of the building section in the village on October 25.

15. *Bonasa umbellus umbellus.*—Ruffed Grouse. This may be classed as a common resident in the county and abundant where conditions are favorable. It was seen in both the north and south portions of the village and surrounding covers and along the trail to Hubbard lake. We flushed several within 200 yards of the Backus hotel and a young lady stopping there shot fourteen during our stay and without the aid of a dog.

16. *Accipiter velox.*—Sharp-shinned Hawk. One flew along the shore of Brownlee lake and thence south over the dwelling section on October 10.

17. *Bubo virginianus virginianus.*—Great Horned Owl. We found an adult male in the hardwood forest on November 11. It possessed a wariness fully equal to the genus in more civilized districts, but was secured by a lucky shot at long rifle range. It was necessary to secure the bird as we were not acquainted with the local avifauna and both *pallescens* and *subarcticus* have been taken in the state. However, allowing for individual variation this bird did not differ from Wayne county examples.

18. *Ceryle alcyon alcyon.*—Belted Kingfisher. A kingfisher frequented the village lakes during the first week of our stay. As it had certain haunts and perches it was doubtless the same bird seen on all occasions instead of different migrants. At sundown on October 20 one settled on a dead limb in front of the Backus hotel. It was a transient, as none had been seen about the lake during the entire week.

19. *Dryobates villosus leucomelas.*—Northern Hairy Woodpecker. The elevated position of the hardwood forest rendered it conspicuous for miles around and one would suppose it an attractive land mark for transients, but we were disappointed to find less bird life there than elsewhere. This thick woods, containing many giant beeches and oaks with tops perforated with woodpecker holes, seemed to us an ideal location for Hairy Woodpeckers, but none were seen there. We saw our first bird in a cedar swamp in Sec. 2, Hawes Township, on October 18. The second, fourth and sixth were noted on October 25 and 30 and November 7 among the pine stumps on an area cleared of second growth in Sec. 6, Harrisville Township. The third was among second growth and pine stumps in Sec. 31, Haynes Township, on October 28, and the fifth among pine stumps in the village on November 4. Ridgway's Manual

gives the length of *villosus* as 8.50 to 9 inches and wing 4.50 to 5.00, and the length of *leucomelas* as 10 to 11 inches and wing as 5.02 to 5.40. Four of the six we observed were secured and measure as follows:

Oct. 18—male—10.20x16.63x5.25.
Nov. 7—male—10.12x16.50x5.12.
Oct. 30—female—9.63x——x4.88.
Nov. 4—female—9.75x15.85x4.88.

Jenkins gives the wing average of 5 male *leucomelas* as 5.16 and 6 male *villosus* as 5.00.

20. *Dryobates pubescens medianus.*—Downy Woodpecker. A pair was seen in the second growth along Hubbard lake on October 15 and another in the same locality on the 18th. All three were working west along the south shore.

21. *Picoides arcticus.*—Arctic Three-toed Woodpecker. In the northwest corner of the hardwood are some hemlock trees and among these we discovered a female of this species on November 11. It allowed a close approach, but upon taking wing passed entirely from the woods in a southerly direction. This was our last day afield and as we did not meet with it earlier it may have been the first of a migration from the north.

22. *Otocoris alpestris alpestris.*—Horned Lark. The height and barren appearance of the ridge supporting the dwelling section of Lincoln was doubtless an attractive land mark for both forms of this lark and the pipits as none were seen elsewhere during our entire stay. There was a gravel outcropping and a bean field that few larks could pass without alighting. All of the Horned Larks came from almost due north and departed towards the south. The migration began with a flock of twelve on October 30 and from seven to twelve were noted daily until November 5, when we counted forty in one flock, and this was the last of them. Six individuals were secured, and comparing with four winter specimens from Rhode Island we find but one of the latter with the sulphur yellow of equal brightness on chin, throat, forehead and line over the eye.

23. *Otocoris alpestris praticola.*—Prairie Horned Lark. Three birds of this form were seen on the gravel slope on October 7 and about 25 on the following day. They were carefully inspected and the one questionable example secured. This was a male with throat, chin and forehead sulphur yellow and could not have been identified without the bird in the hand. During the month it was necessary to take two more for the same purpose and the three specimens of this form and six of the alpestris were all that we required to fix the status of the two beyond all question. About

three to eight of this form were continually about the village and we counted thirty on the 28th and an average of nine a day until November 5, when twenty were counted and these followed the large flock of *alpestris*. During the earlier part of our stay an occasional flock came to the hill from the south or departed east for the cultivated district near Lake Huron, but the general trend was north to south.

24. *Cyanocitta cristata cristata.*—Blue Jay. From two to ten jays were seen daily in the vicinity of Lincoln. The majority of these were single birds and more than a pair was rare. They were all working in a southerly direction until the last few days of our stay, when they appeared to be congregating in the evergreen swamps in flocks of ten to twelve, where they doubtless occur all winter. An average of ten per day passed along the south shore of Hubbard lake and thence up the West Branch.

25. *Corvus brachyrhynchos brachyrhynchos.*—Crow. On October 7 we saw a flock of nearly fifty flying south about two miles east of "mud pond"; also, two single birds on the 8th and six on the 10th, going south over the village. Thus ended the migration before it had begun down in Wayne County, and incidentally we wish to state that a flock exceeding one thousand entered the latter county from Ontario on November 18, 1912, and the next day a flock of twenty concluded the autumn migration in that locality or two days less than six weeks later than in Alcona County.

26. *Sturnella magna magna.*—Meadowlark. From the car window on October 5 we saw a flock of about twenty at Handy station fourteen miles south of Lincoln. Four were seen on October 13 in "the settlement" while driving to Hubbard lake and three were noted in Mikado village on the 27th.

27. *Euphagus carolinus.*—Rusty Blackbird. We saw three in the village on October 11 and two flocks, or about forty birds, among the dead trees on the West Branch on the 14th.

28. *Quiscalus quiscula æneus.*—Bronzed Grackle. Three were flying northeast over Sec. 6, Harrisville Township, on October 28.

29. *Astragalinus tristis tristis.*—Goldfinch. On October 31 we located a flock of twelve in the aspens bordering Brownlee lake. They flew northwest towards the hardwood forest and a single individual was flying over this forest and uttering the characteristic flight note on November 11.

30. *Plectrophenax nivalis nivalis.*—Snow Bunting. The first snowfall occurred on October 23, but the snow melted as it fell. On the 26th a flock of about 100 Snow Buntings passed over the village headed due south and we expected lowering temperature and snow storms, but it continued clear and became warmer. On the 31st a flock of about 150 passed over the village on a course

of about N. 20° E., which would indicate rising temperature, but it turned cold and snowed all day of November 1 and 2. About 200 in two flocks went southwest on November 5, but it turned warmer on the 6th. During the following five days flocks of three to fifteen were seen and all flying northwest. Only three individuals were found with the Horned Larks.

31. *Calcarius lapponicus lapponicus.*—Lapland Longspur. A single individual was with the Prairie Horned Larks on November 4.

32. *Passer domesticus.*—English Sparrow. An approximate estimate of the abundance of the English Sparrow in Lincoln would place the number at 200, or one to each human inhabitant. We often mentally calculated the mortality that must attend so many on such a small living area during the rigor of winter, but in early November the birds became restless with a daily increasing fondness for flying about in flocks and chirping noisily, and on November 8 they arose in one flock and several times circled the village dwellings, making all the noise of which they were capable. We then saw a flock of about one hundred high in the air and approaching from the north. The village sparrows finally dropped to the ground, where they were soon joined by the strangers and all was confusion and excited chatter. We did not see the departure, but the next day only forty sparrows could be found.

33. *Poœcetes gramineus gramineus.*—Vesper Sparrow. This was the most common species in the mixed flocks of sparrows found in the village during our first week there. We counted twenty-four on October 8, but ten was the daily average. Last seen on the 13th in "the settlement," where twenty-five were counted.

34. *Passerculus sandwichensis savanna.*—Savannah Sparrow. Two were flushed on October 8 and three on the 10th from flocks of Vesper Sparrows on some pasture lands in the village.

35. *Zonotrichia leucophrys leucophrys.*—White-crowned Sparrow. A flock, consisting of one male and two females, was discovered in a small brush pile on a highway in the village on October 7.

36. *Zonotrichia albicollis.*—White-throated Sparrow. Four were seen along the margin of Brownlee lake on October 10 and eight the following day in the swamp south of the dwelling section of the village. We expected to find this species rather common.

37. *Spizella monticola monticola.*—Tree Sparrow. Thirty were counted on October 25 in the evergreen swamp touching the southwest corner of the village limits. These were the first of the migration and the greatest number seen on any one day, except November 10. The daily average was fourteen.

38. *Spizella passerina passerina.*—Chipping Sparrow. One was noted on October 10 and a second on the 12th in flocks of Vesper

Sparrows in the village. We secured one of the birds as *pallida* might occur.

39. *Junco hyemalis hyemalis.*—Slate-colored Junco. During our first week at Lincoln we saw an average of fifteen per day, mainly in the mixed flocks of sparrows. There were thirty in "the settlement" on October 13. A daily average of twenty-one was noted along the south shore of Hubbard lake from October 14 to 19, both inclusive. Forty was the most seen in one day prior to October 25, when about 150 were counted southwest of the village. This was the grand exodus, the season concluding with one bird on the following day.

40. *Melospiza melodia melodia.*—Song Sparrow. Found only during the first week of our stay and in the swampy district south of the dwelling section, where twelve were counted on October 11.

41. *Melospiza georgiana.*—Swamp Sparrow. Four were found in the tangled vegetation over water in the same swamp as melodia on October 11.

42. *Passerella iliaca iliaca.*—Fox Sparrow. Small companies of this species were found at different places along the trail to "mud pond" on October 7 and one bird the next day. As time progressed without additional records we concluded that the species had fled the county, but on October 25 we shot one beside a trail in the heart of a dense cedar growth southwest of the village.

43. *Lanius borealis.*—Northern Shrike. One passed in a westerly direction through the village on October 29. Occasionally it would alight, but only to remain less than a minute.

44. *Dendroica coronata.*—Myrtle Warbler. We saw one individual with a flock of juncos on the south shore of Hubbard lake on October 15.

45. *Anthus rubescens.*—Pipit. As we stepped from the house on the morning following our arrival at Lincoln the first birds we saw were individuals of this species, and during our first week at the village no other birds were so abundant. Coming from the north they usually lit among the stumps on the northern slope of the ridge and then worked over the top and southward, sort of drifting along the village streets and the tops of buildings and stumps. They were usually in flocks of ten to fifteen and one of these occasionally remained about the ridge all day. The range of abundance per day was from thirty to more than two hundred individuals. They were in greatest abundance at the time we left for Hubbard lake and probably the migration continued during the week of our absence, for upon our return we noted a flock of fifteen on October 21 and three birds about the village from the 25th to the 29th.

46. *Certhia familiaris americana.*—Brown Creeper. One noted

in the second growth along the south shore of Hubbard lake on October 15.

47. *Sitta carolinensis carolinensis.*—White-breasted Nuthatch. We saw but one individual of this common species during our entire stay in the county. This bird had appropriated the Backus hotel, probably for the winter, and spent about half its time hopping about the roof in search of a crack between the shingles that would just fit the acorn it carried. The hotel is well sheltered in a small pine grove.

48. *Penthestes atricapillus atricapillus.*—Chickadee. Although but tolerably common this species was of more uniform occurrence than any other except the English Sparrow. We found it from the first to the last day afield and usually in little flocks of four or five, while the number of individuals seen on any one day did not exceed fifteen. Down in Wayne County at this season of the year a flock of this species is almost invariably accompanied by a Creeper, Nuthatch or Downy Woodpecker, and sometimes by all three at once, but here the three were rare at Hubbard lake and absent elsewhere and consequently the Chickadees were always alone. We never heard them calling in the hardwood forest without listening for and expecting to hear the nasal pipings of the Nuthatch. All of the Chickadees we discovered were carefully inspected for individuals of *hudsonicus*, and though none were found the species may occur, especially in winter.

49. *Regulus satrapa satrapa.*—Golden-crowned Kinglet. Two flocks, or about twenty individuals, were in the swamp east of Lincoln on October 7. A flock of about twenty on the 16th and ten on the 19th were in the second growth along the south shore of Hubbard lake. This is another species that affiliates with the Chickadee, but we failed to find them together.

50. *Hylocichla guttata pallasi.*—Hermit Thrush. We counted three single birds in the swamp east of Lincoln on October 7 and another on the 19th.

51. *Planesticus migratorius migratorius.*—Robin. On October 14 we were located for several hours where we commanded a view of the lower West Branch and the south shore of Hubbard lake. A flock of three Robins followed the south shore and ascended this river and an occasional Jay came over the same route until we had counted twelve. A flock of Robins appeared in the swamp east of Lincoln on October 25 and remained there inclusive of the 28th. We estimated the flock to contain about a dozen birds, but were unable to ascertain the exact number owing to the dense cover.

52. *Sialia sialis sialis.*—Bluebird. There was a flock of twelve scattered among the stumps along the ridge on October 8. They departed on a course slightly east of south.

THE NEST OF THE GOLDFINCH (*Astragalinus t. tristis*) BASED ON STUDY OF THE DESERTED NESTS.

BY FRANCIS M. ROOT.

Everyone who has noticed birds at all is sure to know the Goldfinch, although he may call it a "Wild Canary." He is a jolly little fellow and his undulating flight and pretty "Per-chic-o-ree" call are known by every bird-lover. But it is only the select few who know him the year round; who have watched him through the winter in his brown suit, and watched his nest-building in the summer.

All through the winter the Goldfinches who remain with us wander about in little bands of from six or eight up to a score or two, subsisting on weed-seeds and scattered grain. In the spring the males change their brown coats for others of brilliant yellow and black, but they still wander about, reinforced by their brethren who have wintered in the south, until mid-summer.

In late July or early August the Goldfinches set about building their dainty, cup-like nests, in which the females lay from four to six very light blue eggs, which in a couple of weeks hatch out into baby Goldfinches. Then comes a busy time, for the parents must hurry around and catch enough insects, mainly plant-lice and flies, for their insatiable little charges. When the young finally leave the nest their food soon changes to the regulation diet of their family; a little gleaned grain, thistle, milkweed, sunflower and weed seeds.

During the winter, the Goldfinches are found mainly on pasture lands or fields that were allowed to grow up to weeds after the crops were gathered, their distribution being determined almost entirely by that of suitable food. In the spring they wander anywhere, and in the fall, when all the weed-seeds are ripe, when grain is being gathered in and left scattered on the ground, when all nature seems to be making provision for the seed-eaters; in this season the Goldfinches may roam where they please, and always find themselves in

a land of plenty. But in the summer, when they are burdened with the care of a family and have to find insects for their young, the Goldfinches seek out some spot that combines the advantages of concealing the nests with that of attracting the insects that must be obtained for their growing young.

The nests that I have found were usually in some such general situation as this. A patch of woods is bordered by a slashing in which numerous small elm and hickory saplings mingle with large thorn bushes of about the same size. Beyond the slashing lies a small area filled with weeds, and beyond that a great red clover field. In such a slashing of two or three acres, there may be from two to half a dozen Goldfinch nests. Another favorite place is in the midst of a bed of thistles or of a berry-patch surrounded by woods, and sometimes nests are found in a lone tree in the middle of a pasture, overgrown with weeds.

The average height of the nest from the ground is from six to ten feet. By far the majority of nests that I have seen were at that height. In slashings they are almost always placed so. Nests in thistles or berry-bushes are usually only three or four feet up, but when the nest is placed in a lone tree or in a tall tree in the edge of woods it is sometimes from twenty-five to forty feet up. Messrs. Baird, Brewer and Ridgeway, in their "North American Land Birds," say that the nest is "very rarely higher than ten feet," which suggests that eastern birds may build lower than ours, on the average.

According to my observations and reading, the nest is invariably placed at a fork, and usually in a crotch. Most nests will be found in an upright, two or three pronged crotch and bound to each fork at the rim and along the sides. An interesting variation from this type was found, in which the nest was bound to both forks of a two-pronged crotch and the bottom supported by a twig, the whole nest being on one side of the crotch and not in it. Occasionally the nest will be found saddled on an almost horizontal limb, but always

at a place where there is a fork, or a couple of side branches, so as to offer a broader surface for the foundation.

It does not seem to matter much what kind of a tree is used, so that it has a good crotch at a convenient distance from the ground. Thistles are often used, as are also berry or rose bushes. The favorite tree seems, about here, to be the American elm, but this apparent preference is probably due to the abundance of suitable elm saplings in the slashings and their good supply of upright crotches of three or four prongs. Nests were also found in maple, apple and shagbark hickory trees.

There is considerable variation as to size, especially of the cavity. The average height of the nests examined was two and three-fourths inches, the average diameter three and one-half inches. The average depth of the cavity was one and one-half inches, and its average diameter two and one-half inches. This would make the walls of the nest each half an inch thick and the bottom an inch and a quarter thick. This average size, and especially depth of the cavity, is probably too small, for several of the nests examined had phenomenally thick bottoms and broad, shallow cavities.

The shape of the nest is that of a round-bottomed china cup. The cavity is usually deep, so that the bottom is not more than twice as thick as the sides. In a few of the nests, as mentioned above, the cavity was so shallow (because the bottom was thick, not because the nest was small) that it was rather of the shape of a saucer than of a cup.

Not having witnessed the building of the nests I cannot say as to the method of construction. The nests have a base, formed by stretching strips of bark from one fork of the crotch to another, so as to form a framework in the shape of a hammock. The spaces between and around these are filled with a felting of shredded vegetable matter. Upon this the cup is built. Similar strips of bark run around and around the rim and sides of the cup, and the interstices are filled with felting as before. The bottom of the cup is mostly felting, with sometimes a few strips of grass or

bark to reinforce it and hold it in shape. Within all is the lining, covering the bottom and the lower part of the sides of the cavity.

The materials used vary a great deal in exact kind, but the general type of things necessary is the same in all. For the framework of the base and cup, long strips of some material, five to seven inches long and one-sixteenth to one-fourth inch wide, are required. These are often of grapevine bark, and milkweed inner bark is also much used. The framework may be composed entirely, or almost entirely, of grapevine bark, of milkweed bark, of grass-stems or weed-stems; or it may be composed of all of these, together with hickory, elm or raspberry bark.

Apparently the materials nearest at hand are used. Two nests taken from elm trees in a slashing containing many milkweeds and few other sources of supply, have the framework almost entirely of milkweed bark, with a little elm bark in one (Nos. 1 and 4 in the table). Another (No. 6), from a slashing containing no milkweeds, but near a large patch of wild grapevines, has its framework entirely of their bark.

The framework is often fastened together with cobwebs. The felting, which fills all the interstices of the framework and fastens it to the crotch, hangs out in rags, giving the nest a fantastic tattered appearance. It is composed mostly of comparatively coarse "vegetable wool." The felting also contains always some fine grass-stems or twigs and cobwebs, usually a dried leaf or two of the tree the nest is built in, often a little dried moss or some hickory leaf-stems, and I once found a good deal of real wool.

The "vegetable wool" mentioned before, is composed of very finely shredded vegetable fibers. The most common substance in it is the outer bark of the milkweed, although it often contains also a little bark or grass substance. The milkweed plant is common in all kinds of places, and its dried stem often stands till a year or two after its death. On these dead stems the thin outer bark hangs in little ragged shreds, inviting attention. The inner bark is very tough and strong

and is often used for the framework, as stated above. The outer bark is of a silvery-gray color, and when finely shredded and packed down looks much like dirty thistledown. Under the lens, however, its curling tendency and splittings and flat shape of the strands is easily seen.

This "wool" is the felting used in most cases. In some nests a similar substance has been prepared from grass-stems, while in the nest mentioned above (No. 6), in which the entire framework was of grapevine bark, the felting is very scanty, consisting of cobwebs and a few fine grass-stems. In another nest (No. 7) the framework is mainly of grass-stems, while the felting contains fine rootlets, cobwebs, a little "vegetable wool" and considerable real wool, evidently picked from the barbed-wire fence of a nearby sheep pasture.

The lining should be, of course, thistle-down, according to all precedents. However, in only one of the eleven nests I examined was there any considerable amount of it, and in only one other was there any trace of it. Two nests, each built near a swamp, were lined with the yellowish down of the cat-tail, and the rest were lined mainly with very fine "vegetable wool." This "vegetable wool" looked so much like dirty thistledown that I was at first deceived as to its nature, but on making a microscopic examination the difference could be readily seen. The wool was in such fine shreds that its source can be only a subject of conjecture. Most was of a silvery-white, greatly resembling dirty thistledown, and this, I think, came from the thin outer bark of the milkweed. Other specimens, showing a yellowish tinge, were probably made up of shredded grass-stems, while another owed its pinkish tinge to an admixture of some kind of shredded bark. In the nest (No. 6) so conspicuously of grapevine bark and lacking in milkweed "products," the lining was extremely scanty, being composed of fine strips of grapevine bark, mixed with a little "wool," probably from grass-stems. In nest No. 5, on the other hand, built where milkweeds were many and grapevines few, the lining was of extremely fine "milkweed wool," and in some places was fully three-quarters of an inch thick.

It is interesting to wonder whether there is any connection between the color of the lining and the color of the eggs. The lining gives a general effect of a dirty white, which would match pretty well the light bluish tint of the egg. Does the bird make a point of having a light-colored lining, or is it merely that the available materials all give that effect? This point could perhaps be determined by a careful study during the nest-building period. It does not seem likely that the bird does this, but there is the possibility.

One other point, however, is well worth noting. I refer to the correlation between the bird's nesting materials and feeding habits. The nesting materials are all such as could be gathered under the same circumstances as feeding, and many of them, such as the grass and weed-stems, and the "vegetable wool," come from plants which are themselves sources of food supply.

The chief point that has forced itself upon my attention, throughout my study of the nests, has been the use of the most easily available materials. In none of the nests was there any material that could not have been gathered within a hundred yards of the nest, and in most the materials could have been duplicated within twenty feet. For the framework the Goldfinch demands long flexible strips, but they may be bark of either milkweed or grapevine, or grass-stems or small twigs from weeds. For the felting, cobwebs are apparently a necessity, but for the rest vegetable fibers, wool, grass-stems, bits of weed and bark, or dead leaves will serve. If, for the lining, thistledown is available, well and good; if not, why, cat-tail down or fine "vegetable wool" will serve. This adaptability enables it to increase more rapidly than if it demanded thistledown alone for its lining. If this were the case, it would be concentrated in colonies, around the few thistle patches that the country around here affords. Now, on the contrary, it can find some good substitute anywhere, and is found distributed rather with regard to suitable nesting trees and food conditions than to nest materials.

A CRITIQUE OF BARROWS' "MICHIGAN BIRD LIFE."

BY BRADSHAW H. SWALES

Museum of Natural History, University of Michigan.

The recent appearance (July, 1912) of Barrows' book on the birds of Michigan[1] marks an important epoch in the history of Michigan ornithology, if not in that of the entire region bordering the Great Lakes. Viewed as a whole the ornithology of the several states in this region has been but superficially studied; in certainly the majority of the counties composing each state there has either been no field work by competent ornithologists, or what has been done is very inadequate when measured by present standards.

In Michigan there have been only a few careful and competent men and their work has mainly been done at a few places in the state, viz., Ann Arbor, Detroit, Grand Rapids, Kalamazoo, and Lansing. The biological expeditions of the University of Michigan Museum and the Michigan Geological and Biological Survey have added considerable data for certain areas, viz., the Porcupine Mountains, Ontonagon County; Isle Royale, in northwestern Lake Superior; the south shore of Saginaw Bay, Huron County; the Brown Lake region, in Dickinson County; the Charity Islands of Saginaw Bay, and Whitefish Point, in Chippewa County, but much remains to be done, especially in the northern peninsula and the entire upper half of the lower peninsula. The breeding ranges of a number of species will undoubtedly be materially extended by studies in these sections.

The ornithology of Michigan has also suffered from the publication of records made by unreliable observers. In some instances the questionable records may be checked up by discounting them in proportion to the experience of the observers and the chances of error in identifying the species.

[1] **Michigan Bird Life, by Walter Bradford Barrows. Special Bulletin of Zoölogy and Physiology of the Michigan Agricultural College. 1912.**

but unfortunately this can not be done in one case. In the interests of Michigan ornithology it must be said that the local naturalists have long since learned that the records of A. B. Covert are mostly unreliable, whether or not they are represented by extant specimens.

We have one book on Michigan ornithology,[1] which appeared in 1893, but it is unfortunate, to say the least, that this work was ever published, as it is unauthoritative, carelessly compiled and marred by many errors and mis-quotations. The book was never reviewed by any one at all familiar with Michigan ornithology or ornithological conditions in the state, so that a number of the records accepted by the author have been widely quoted, with the result that the status of a number of species in the state is not rightly understood.

In view of this condition it is easy to see why Barrows' work is considered a boon by Michigan naturalists. It is all that our previous list was not. It is up-to-date, comprehensive, compiled carefully in that most of the doubtful records have been confirmed as far as possible, and well written in a form that may be used by students. With little doubt it will be the standard reference work on Michigan ornithology for years to come. With all the care with which the book has been prepared, however, several species have, in the opinion of the writer, been included upon insufficient or unreliable evidence, and these should be pointed out that they may not be accepted without proper consideration.

As will be seen from the discussion of each of these species (see below), some of the controversy over the right of certain forms to a place in the Michigan list depends upon what shall be considered as constituting a primal record. The writer believes that Brewster[2] gives the only safe and proper guide when he states, — "My early training and ex-

[1] Birds of Michigan, by Albert John Cook. Bulletin 94, Michigan Experimental Station, State Agricultural College.

[2] The Birds of the Cambridge Region of Massachusetts. By William Brewster. Memoirs of the Nuttall Ornithological Club, No. IV, 1906, p. 5-6.

perience have led me to believe that — with certain exceptions about to be specified — the occurrence of birds in localities or regions lying outside their known habitats should not be regarded as definitely established until actual specimens have been taken, and afterwards determined by competent authorities. But on no authority, however good, should a mere field observation of any bird that is really difficult to identify be taken as establishing an important primal record." The fact that the species should or might occur in Michigan because it has been secured or observed in a neighboring state or waters, does not, in the writer's opinion, entitle the bird to a place in the Michigan list. It should actually have been secured in the state and the specimen examined by some competent authority before it is taken from the hypothetical list. This constitutes the only strictly safe guide, and should have been enforced in the past.

Another thing to be carefully considered is the reliability of the early records. It is not to the discredit of the early observers to say that they were not generally as carefully trained as the ornithologists of today, and that they were usually unfamiliar with the museum specimens and literature. This particularly applies to western states, for many of the now familiar western species were very rare in collections other than those of a few of the large eastern institutions. Indeed, it was not until the appearance of Baird's masterly treatise in the ninth volume of the Pacific Railway Reports (1858) that careful descriptions of many species were available. These are facts that must be considered in any comprehensive attempt to compile an accurate list of the species of a state.

If one gives due weight to the absence of actual Michigan records, the probable errors of the early ornithologists, and the unreliability of some of the later observers, thirteen of the three hundred and twenty-seven species admitted by Barrows to the Michigan ornis must be excluded until further evidence is at hand. These species are as follows:

1. *Larus hyperboreus.* Glaucous Gull.—No authentic Mich-

igan record or specimen of this species is known. It has been found on Lakes Michigan and Ontario, and probably occurs rarely on Michigan waters, but under a strict ruling the bird should be taken from the state list until a specimen is actually secured within our limits. The writer knows of no Lake Erie records.

2. *Larus franklini.* Franklin's Gull.—There is apparently no authentic record for this bird in Michigan. Barrows includes it on the strength of its occurrence in Indiana, where "it has been occasionally seen by Mr. J. W. Byrkit at Michigan City."[1] This region of sand dunes seems to be a very unlikely locality for this gull. It is not included by Woodruff in the list of species in the Chicago area,[2] a region which is close to Michigan City. Wisconsin records are mainly in the interior, as would be expected; since Franklin's Gull is more a bird of the prairies than of the larger bodies of water like Lake Michigan. Undoubtedly *Larus philadelphia* is the source of many records of Franklin's gull. I am aware of no records for Indiana, and but one early one for Ontario.[3] There is one late record for Ohio.[4]

3. *Xema sabini.* Sabine's Gull.—This bird is included as a Michigan species on the authority of A. B. Covert,[5] who states that a female was secured on the Huron River, Ann Arbor, November 17, 1880. Anyone who will consult and compare the two lists published by Covert, and his two manuscript lists, will see how vague was his knowledge of the majority of the water birds, which, taken with his total unreliability in other respects, renders this record worthless. The above bird was said to have been taken by James Bowyer, and nothing is known of it at the University of Michi-

[1] Butler, A. W. Birds of Indiana. Dept. Geol. and Nat. Resources, Ind., XXII, 1897, p. 574.

[2] Woodruff, F. M. The Birds of the Chicago Area. Chicago Acad. Sci., 1907.

[3] McIlwraith, Thomas. The Birds of Ontario, 1894, p. 49.

[4] Wilson Bulletin, XIX, March, 1907, p. 20.

[5] Covert, A. B. Birds of Washtenaw County. History of Washtenaw County, 1881, p. 192. Chicago.

gan Museum. There are but few records for the Great Lakes and these are generally unaccompanied by any convincing proof. There are no Indiana or Ontario records. In Ohio there is an old and somewhat unsatisfactory record of Winslow's at Cleveland. In northern Illinois E. W. Nelson records a bird seen and shot at, but not secured, in 1873, which was probably a mistake in identification.

4. *Sterna maxima.* Royal Tern.—This tern is included as a Michigan bird on the authority of Stewart E. White, who states that at Mackinac Island "I examined several specimens. Rather more rare than *S. tschegrava.*"[1] Of *S. tschegrava (caspia)* he writes: "Thousands of large terns accompany the gulls in migration, but are shy. They resemble each other so much that identification on the wing is very uncertain. I repeatedly took this tern and should call it common." When one takes into consideration the fact that there are no records whatever for *Sterna maxima* for Indiana, Illinois, Wisconsin, Ohio, or Ontario, and that the bird has a decided southern range, the above statement may certainly be taken to represent an error in identification. If the Caspian tern is called "common" and the Royal tern "rather more rare than *S. tschegrava*" the latter assuredly would be classed as a fairly abundant bird, which it is not. There is no evidence known to the writer that a Michigan specimen of the Royal tern has ever been examined by an experienced ornithologist. Mr. White, at the time of these observations, had only a limited field experience. The A. O. U. Check List, 1910, does not record *Sterna maxima* as far north as the Great Lakes, and consequently does not accept this record. The species should be eliminated from consideration as a Michigan bird until confirming evidence is at hand.

5. *Sterna paradisæa.* Arctic Tern.—The Arctic tern is included by Barrows on the basis of a statement of A. B. Covert that he "secured a male bird at Monroe, Mich., April 9, 1875." The writer is not aware of the source of this record as recorded by Barrows, as the species is not included in either

[1] The Auk, 1893, p. 222.

of Covert's annotated lists[1] of the birds of lower Michigan or in his 1881 list,[2] or in the manuscript of 1878. In his latest manuscript list, 1904, Covert states: "Included in all the lists of the birds of the state yet no authentic records." It should be noticed that this writer consistently repudiates in his later lists many of his earlier records. The record is furthermore doubtful as Covert had very little experience with the *Laridæ*. The species has few, if any, satisfactory Great Lakes records. We know of none for Ohio, Indiana, or Ontario. The Wisconsin breeding records of Kumlien are apparently not accepted by the A. O. U. in the third edition of the Check-List.

6. *Sterna antillarum*. Least Tern.—There appears to be no unimpeachable record for this tern in the state, the various published records all being open to suspicion. Barrows writes: "It is included in Dr. Miles' list of 1860 on the authority of Professor Fox, who is said to have taken a specimen at Grosse Isle, Detroit River." This is a mistake as the record given by Fox[3] is "The Least Tern, *Sterna minuta*.[1]" The figure 1, he states, denotes that the records are given on the authority of Audubon in his Synopsis of the Birds of North America.

Barrows further writes, "In the manuscript notes of A. B. Covert there is a record of a male taken at Sandshore Lake, Ann Arbor, May 4, 1873, as well as three specimens (two males and one female) taken at Bayport, Huron County, October 13, 1878." None of these specimens can be located, however, and it is not impossible that they were specimens of the Black Tern, which has been repeatedly mistaken for the present species. The writer cannot determine the source of these records, as Covert does not furnish any specific dates in any of his published or manuscript lists. He does not include the species in the 1878 list, but in the Atkins manuscript

[1] Forest and Stream. 1876.

[2] Birds of Washtenaw County.

[3] Fox, Charles. The Birds of Michigan, p. 163. Place of publication unknown.

list, says: "Not uncommon during the migrations." In the 1881 list he says: "Migrant, not common." And in his latest compilation, 1904, he writes, "Recorded first in Covert's list of 1875. Dr. Gibbs, in his list of 1879, questioned the correctness of this record, but the bird has since proven to be a common summer resident at suitable localities throughout the lake regions of the state." It will be noticed that in each of these lists the statements regarding the bird are totally at variance. Careful search at the University of Michigan Museum reveals no mounted specimen labelled Michigan or any catalogue entry; there is, however, a mounted bird from Nebraska in the collection.

7. *Somateria dresseri.* Eider Duck.—The eider duck is included as a Michigan bird by Barrows as follows: "Dr. Gibbs says that W. E. Collins, of Detroit, wrote him, in 1883, that he had one specimen in his collection (a young male showing white traces), taken on the Detroit River in December, 1882." There appear to be few, if any, authentic records of this bird on the western Great Lakes, and a number of specimens labelled as this species have proved, upon examination, to be *S. spectabilis.* Collins is known to have procured the latter bird, and the above evidence is too meagre to entitle the eider duck to a place in the Michigan fauna.

8. *Branta canadensis hutchinsii.* Hutchins' Goose.—The claim of Hutchins' goose to a place in the Michigan fauna is still unproven, although it probably has been taken here. The late W. E. Collins, a taxidermist in Detroit, wrote Morris Gibbs that he "had it, taken at the St. Clair Flats." The writer recalls having examined years ago a goose formerly belonging to the old Detroit Scientific Association, labelled as this species, which was mounted by Collins. This bird was a small Canada Goose, and may have been the basis of the above record. It would be well to treat Hutchins' goose as hypothetical until a more satisfying record is available. The species seems to be a rare one in the region of the Great Lakes.

9. *Elanus leucurus.* White-tailed Kite.—Barrows writes

of this bird: "The claim of this bird to a place in the Michigan fauna rests mainly on the statement of A. B. Covert, of Ann Arbor, who says that he killed a specimen in September, 1878, on the Honey Creek marshes, four miles west of Ann Arbor, and that another was killed April 21, 1879, by C. H. Manley, in Livingston County. The latter specimen is said to be mounted and in the possession of Capt. Manley. The first specimen was for a time in the possession of Mr. Herbert Randall, of Ann Arbor, but we have not been able to examine either specimen." These records are undoubtedly erroneous, and there is no evidence at hand to support them. No other ornithologist appears to have seen or known of the existence of these specimens. The last A. O. U. Check-List does not admit this record and it should be eliminated.

10. *Ictinia mississippiensis.* Mississippi Kite.—This southern kite is included as a Michigan bird on the strength of a specimen said to have been taken many years ago and recorded by Mr. D. D. Hughes in a manuscript list of the birds of the state. No trace of this specimen can be found and no statement as to who examined it. The writer has not seen the manuscript list referred to, but the record is entirely too vague and unsatisfactory, and is not included in the A. O. U. Check-List of 1910.

11. *Sayornis sayus.* Say's Phœbe.—This bird is admitted on the authority of Charles Fox,[1] who says: "Say's Flycatcher (a) Musicapa Saya." (a) refers to the footnote, "Killed near Owasso, Shiawassee County, July, 1853." Miles, in the first biennial report, says: "*41a. *Sayornis sayus* Baird. Say's Flycatcher."[2] The note *41a refers to "*Sayornis sayus* Bd. on the authority of Rev. Charles Fox, who shot a specimen at Owosso, Shiawassee County, July, 1853. The species in the catalog marked 'a' were obtained at Grosse Ile, Wayne County, by Fox, and are given on his authority." As stated by Barrows these two records, with little doubt, refer to the same bird which was taken near

[1] The Birds of Michigan, p. 161.

[2] Miles, M., in First Bien. Rept. Geol. Surv., Michigan, 1861, p. 224.

Owosso in July, 1853, as Fox mentions no Grosse Ile bird. This record is certainly a misidentification by Fox, as it is not probable that he had ever examined actual specimens of this species. The record does not appear in Baird's work,[1] although Fox was a correspondent of the Smithsonian Institution and sent specimens there. The extent of Fox's ornithological knowledge is of course unknown, as he only issued a practically unannotated list of Michigan birds. He was locally known more as a general naturalist, and was particularly interested in herpetology. The A. O. U. does not accept his record and *Sayornis sayus* should be eliminated from all consideration as a Michigan species.

12. *Passerherbulus lecontei.* Leconte's Sparrow.—Barrows gives only one record for this species as a Michigan bird, A. B. Covert's claim that he secured a specimen at Ann Arbor. There is a mounted bird in the University of Michigan Museum (488q, date May 12, 1894), but there is grave doubt that the specimen was taken in Michigan. Covert never recorded it as one would naturally expect him to, owing to the fact that it was the first and only Michigan specimen. As Covert's records are all open to such grave suspicion it would seem best to eliminate this species from the Michigan fauna.

13. *Helmitheros vermivorus.* Worm-eating Warbler.—This is another species whose occurrence in Michigan rests on the authority of Covert. Barrows quotes a record of Covert's, from the latter's last manuscript list, "That he took a male at Ann Arbor, Washtenaw County, May 21, 1878. The specimen, however, has been lost sight of." There is no record of this specimen in the University of Michigan Museum, where it might naturally be expected to be. Moreover, Covert does not include the species in his "Annotated List of the Birds and Mammals of Washtenaw County, Michigan," issued in March, 1881, and this list was supposed to be up to date. In the Atkin's manuscript list of 1878 he says: "I can regard this bird only as an accidental visitor. One specimen, a male,

[1] Pacific R. R. Rept., Vol. IX.

was taken May 12, 1875." Here again a discrepancy in dates is apparent, and the record is omitted altogether in his final published list. This record may be safely eliminated from consideration, and there appear to be no others at all sufficient to admit the species to the state list. Jerome Trombley, of Petersburg, Monroe County, a careful and keen observer, was unable to find it in a section of the state where it might naturally be expected to occur if at all.

NOTES ON THE BREEDING HABITS OF AGELAIUS PHOENICEUS.

BY NOEL L. HACKETT.

The following observations on the habits of the Red-winged Blackbird (*Agelaius p. phœniceus*) were made during the spring of 1910 on a farm in the Missouri river bottoms about thirty-five miles south of Sioux City.

The birds came into the country along about the last of March from the twenty-fifth to the thirty-first. The males seemed to flock together and the females by themselves, but they came so close together that I could not tell whether there was any difference in the date of arrival. They came in large flocks containing several other species, such as the yellow-headed blackbird and bronzed grackle.

They were seen for about a week and then it seemed as though they had almost all disappeared from the country, but again about the first of May they appeared in small flocks of twenty-five or thirty, and took to the meadows rather than to the trees as they had done earlier in the season. They now began the process of mating, but it was impossible for me to tell much about the way this was accomplished.

However, there seemed to be a scarcity of females, and all over the meadow little flocks could be seen, consisting of four or five males and one female. On the Sunday morning following their second arrival I could not find in the whole col-

ony a single unmated male. They had mated and the extra males had flown to some other territory. As I have indicated they nested in a colony. There were fifteen pairs and we found fourteen nests within a very few rods of each other.

They built their nest of weeds and dead grass. The foundation was of coarse weeds laid crossways in layers, thus raising the nest off the ground about an inch and a half. Then the nest proper was made of very fine grass wound around it horizontally with some very fine roots woven in up and down to hold it together. It is a very neat little affair about two and one-half or three inches across the top. Both birds worked diligently in the process of home-building and it was here that I found my pair and was able to note some marks of distinction, which were: on the male a light spot on his breast that was almost a freak mark, and on the female a little tinge of red on the left wing.

They finished the building of the nest on the twenty-third day of May; then they rested over the twenty-fourth and the first egg appeared on the twenty-fifth and one each succeeding day until the twenty-eighth, when the clutch was completed. It is very hard to describe the eggs. They are a sort of a pale blue bordering on green and having a sort of a yellowish tinge. They were spotted at the large end with large irregular brownish-black spots, while the lower or smaller half was perfectly clear.

They were about one inch through the long way. They were laid in the nest with the small end towards the center. In order to see if that was the intention I took the eggs and pointed the small end of each towards the outside, but the next day they were all changed back again and in that position they just filled the nest.

The female did not begin incubating immediately after the clutch was laid, but waited and seemed to rest for three days. Then she began the process of incubation. At one time, about six o'clock I went to the nest, and as I approached the nest the male flew off, seeming to indicate that he was assisting in the process.

CORRECTIONS TO A PRELIMINARY LIST OF THE SUMMER BIRDS OF FALL RIVER COUNTY, SOUTH-WESTERN SOUTH DAKOTA.[1]

BY S. S. VISHER.

Otus a. maxwelliæ.—Rocky Mountain Screech Owl. A specimen collected near Oelrichs, August 4, 1911, has been identified by Oberholser as this form. Though I then strongly suspected that it was the Rocky Mountain bird, such a great extension of range as this capture makes, caused me to await verification.

Speotyto c. hypogæa.—Burrowing Owl. Very common in the very extensive prairie dog towns which are to be found along many of the valleys of this county. Omitted from the list by stenographic error.

Dryobates p. homorus.—Batchelder's Woodpecker. Recognizing that the Downies of the western edge of South Dakota were different from those of the east, I somehow fell into the serious error of confusing the names of the illustrious ornithologists, Nelson and Batchelder, and reported the Nelson Woodpecker (which replaced the Batchelder's in the northern Rocky Mountains). Editor Stone pointed out this error in "The Auk," whereupon I submitted a specimen of the Downy of extreme western S. D. (collected in Harding County) to Mr. Oberholser, who named it *D.p. homorus.*

Sitta c. nelsoni.—Rocky Mountain Nuthatch. Recently a new variety of the White-breasted Nuthatch has been recognized. The "Slender-billed" variety is now restricted to the Pacific coast and the Nuthatches of the Rocky Mountain, etc., are called *S. c. nelsoni.*

Myadestes townsendi. Townsend's Solitaire. The fledgling collected July 27 near Minnehahta has been identified by the Biological Survey as the Solitaire. The bird was in such a juvenile plumage, short wings, short tail, etc., that its identification was not simple. This is the first "authentic"

[1] The Wilson Bulletin, March, 1912, p. 1-6.

record of the Solitaire in South Dakota and quite an extension of range. Knowing of the previous capture of the mockingbird in the Black Hills (as referred to in "The list") I naturally assumed the fledgling was a mockingbird instead of a bird not before "recorded" from that section.

University of South Dakota, Vermilion, S. Dak.

THE WILSON BULLETIN

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Edited by LYNDS JONES.

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Editorial

The editor will be away from Oberlin from the last week in June to the middle of September. His address during that time will be Kelleys Island, Ohio. He hopes that any important communications may reach him before his departure for the summer work, and that communications addressed to him during his absence will bear the new address. His work during the summer will be studies of the summer birds of the region, in which previous work has been done on the migrations, followed by a further study of the migrations. In this work he will be assisted by students.

We have received an interesting letter from our vice-president, Mr. Bradshaw H. Swales, who is spending some time among the islands off from Tampa Bay, Florida. Readers of the Bulletin may expect to share with Mr. Swales the interesting experiences of which his letter speaks. Our president, Mr. W. E. Saunders, is also in the South Atlantic states on ornithological business. There has been all too little work done in the south-eastern part of our

country since the days of Wilson and Audubon, and we are pleased to note that recently more attention is being given the region.

At the date of writing (March 8) there has been but one small migration wave, consisting of Bluebirds, Robins, Killdeers, and Meadowlarks in Northern Ohio. This occurred on February. 19. Immediately winter shut down again with the largest fall of snow of the entire winter and temperatures as low as any experienced even in the cold wave of early February. Since these conditions prevailed over most of the northern half of the country we may all look forward to a rush of migrants when the winter finally breaks, and a probable mixing of the species making up the second and third waves. Watch for it.

THE ANNUAL MEETING.

It has been impossible to complete arrangements for the meeting which was voted to be held during this spring season, so that announcements will have to be made by postal or letter later. It is hoped that all who have any clear ideas about the place and time for the meeting will make their ideas known to the secretary, Mr. G. Eifrig, Addison, Ill., at the earliest possible moment.

ELECTION OF OFFICERS FOR 1913.

Balloting for officers resulted in the election of the following:

President—W. E. Saunders, London, Ontario, Canada.

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Executive Council—Frank L. Burns, Berwyn, Pa.; J. H. Fleming, Toronto, Ont.; Lynds Jones, Oberlin, Ohio.

ELECTION OF MEMBERS.

The following persons are nominated for Active Membership since the last report:

John Dryden Kuser, Bernardsville, N. J.

H. G. Morse, Huron, Ohio.

SPECIAL RESERVATIONS FOR WILD BIRDS.

It is gratifying to see that the U. S. Government is finally awakening to the fact that it is policy to give more attention to the preservation of wild birds. Such a course is directly in line with the so-much-talked-of conservation of our natural resources.

The part that birds play in the economy of nature by their destruction of insects is of more importance than has been, or is even now, generally realized. In the protection and consequent increase of our birds we utilize a great natural power in the war against noxious insects—pests that are making havoc with our crops to the extent of many millions of dollars yearly.

The agitation of bird protection is bringing tangible results. Laws for their welfare are being extended, made more rigid and perhaps better enforced. A more wholesome observance of the game laws is noticeable.

Reservations are being set apart by the government for the especial benefit of the birds—places where they can resort to breed, or can stop to rest when migrating, unmolested by hunters. These reservations vary greatly in character, some being rocky and almost barren islands, while others are vast areas of marshy waste, grown up to rank vegetation—tempting resorts for waterfowl and the waders. If properly policed these will have a powerful influence for good.

We have these bird reservations not only in the United States proper, but also in Alaska, in the Dry Tortugas islands south of Florida, and at Hawaii. At the latter place several whole islands have been thus set apart, and they constitute one of the largest and most successful breeding places for sea birds to be found anywhere in the world.

Four years ago we had but sixteen of these reserves. During the next year they were increased to 51. Since then the number has been considerably augmented. This shows commendable progress.

L. B. CUSHMAN.

North East, Pa.

Field Notes

A BALTIMORE ORIOLE IN WINTER.

On January 15th, 1913, I observed a male Baltimore Oriole in first year plumage, at the home of H. D. Rymer, a farmer, living near Columbiana, Ohio.

The Oriole first appeared a few days before Christmas, and has been feeding there regularly ever since. While I was observing him, he went from the suet to an orchard, where he was eating apples that remained on the trees. Mr. Rymer informs me that when it first appeared its feathers were ruffled, and it did not seem to be in nearly as good condition as at the present time. I am inclined to think the bird was disabled at migration time and could not leave for its usual winter home with the other migrants. I judge this from the fact that its left wing appeared to be about an inch lower than the right when the bird was perching with the wings folded to his body.—Geo. L. Fordyce, Youngstown, Ohio.

CHRISTMAS TOWHEES NEAR STEUBENVILLE, OHIO.

A flock of fifteen or twenty Towhees, consisting of both males and females, was observed on December 26, 1912, about four miles south of Steubenville, in West Virginia. There was several inches of snow on the ground, temperature about 60, with a bright sun. The Towhees were seen about 11:30 in the morning.

KENYON ROPER.

Steubenville, Ohio.

UNUSUAL RECORDS FOR HURON, OHIO.

Robins, Bluebirds, and Meadowlarks have been seen all during January. Red-winged Blackbirds were seen December 28, also two Snow Buntings, Rusty Blackbirds during December and on January 1 and 5. Two Red-headed Woodpeckers have remained in the region all winter. On January 19 I found a Myrtle Warbler and a White-throated Sparrow with a flock of Tree Sparrows just east of Rye Beach. An Old-squaw Duck was found in the lake on February 2.

H. G. MORSE.

Huron, Ohio.

THE MOCKINGBIRD IN CAMBRIDGE, OHIO.

Two strange birds appeared in our town the evening of September 1st. As Mockingbirds had never before been reported from this locality, we were puzzled, at first sight, to name them. The shape

immediately suggested "Brown Thrasher Family," and when the white banners in wings and tail were spread in flight the identification was perfect. A friend, who was familiar with them, both in the South and in California, verified our "find." They were in and around the lawn for a month. Numbers of Blue Jays were with us at the time, and the Mockers would give the harsh scream of the Blue Jay so perfectly, that unless seeing the bird, we would be unable to distinguish the real from the mimicry. This, aside from the shrill call note, was the only sound we knew them to make. Brown Thrashers are very common in this locality.

MRS. ROBERT T. SCOTT.

SOUTH DAKOTA RECORDS OF SOME EASTERN BIRDS.

The state museum of South Dakota is in an embryonic stage, but it contains a few interesting South Dakota bird skins. A short time ago I went over the collection selecting specimens that promised to be of interest and sent off a number to the U. S. Biological Survey for identification by H. C. Oberholser. Wells W. Cooke, in a recent letter, mentioned some twenty-three as noteworthy extensions of established ranges. The data concerning the records of such western birds has been published in "The Condor." It is here desired to submit that on certain eastern forms whose ranges are extended westward hereby. Specimens from Menno were collected by E. H. Sweet. I am responsible for the remaining.

Hairy Woodpecker (*Dryobates v. villosus*).—Menno, Hutchinson County, Southeast-central S. D., August 2. The supposition has been that the Hairys were of the northern variety.

Alder Flycatcher (*Empidonax trailli alorum*).—Forestburg, Sanborn County, Southeast-central S. D., August 10; Evarts, Dewey County, Northwest-central S. D., August 6. The most common small flycatcher of eastern South Dakota.

Savannah Sparrow (*Passerculus sandwichensis savanna*).—Vermilion, Clay County, April? A migrant.

Lark Sparrow (*Chondestes g. grammacus*).—Hutchinson County, June 21. A common summer resident.

Bay-breasted Warbler (*Dendroica castanea*).—Hutchinson County, May? A rare or accidental migrant.

Winter Wren (*Nannus h. hiemalis*).—Hutchinson County, April 14. A rare migrant.

White-breasted Nuthatch (*Sitta c. carolinensis*).—Menno, Hutchinson County, February 15.

S. S. VISHER.

State University, Vermilion, S. D.

Publications Reviewed

Index to Papers Relating to the Food of Birds by members of the Biological Survey in Publications of the United States Department of Agriculture, 1885-1911. By W. L. McAtee. 1913.

There are thirty-one pages of brief summaries of twenty-seven Bulletins, and 103 other titles, and thirty-six pages devoted to the Index. This is a timely and convenient paper. L. J.

Notes on the Iridescent Colors of Birds and Insects. By A. Mallock, F.R.S. From the Smithsonian Report for 1911, pages 425-432 (with plates 1-3). 1912.

After painstaking study and many tests the author is led to the conclusion that "interference of one kind to another is the true cause of natural iridescence color in all cases." L. J.

On the Positions Assumed by Birds in Flight. By Bentley Beetham, F.R.S. From the Smithsonian Report for 1911, pages 433-439 (with plates 1-8).

Much has been compressed into the seven pages of description and discussion, both in explanation of the sixteen figures and in drawing conclusions from them. The author brings out the fact that in various flight movements the feet and tail supplement the wings, especially in retarding the forward movement preparatory to alighting. Steering is accomplished by changes of position of the body and wings in their resistance to the air. The tail is used more as a corrective after the actual steering has been done by wings and body than in initiating any change of direction. The pictures are for the most part well chosen to illustrate the points discussed. L. J.

The Passenger Pigeon. Accounts by Pehr Kalm (1759) and John James Audubon (1831). From the Smithsonian Report for 1911, pages 407-424. By Edgar A. Mearns. (With Plate 1, colored.)

A reprint of the accounts by these two men of the earlier days in the palmiest days of this now extinct bird. Not only intensely interesting in themselves, but most timely in these days when discussion is closing the record. L. J.

Description of a New African Grass-Warbler of the Genus Cisticola. By Edgar A. Mearns, Associate in Zoölogy, U. S. National Museum.

Cisticola prinioides wambugensis, Wambugu Grass-Warbler. From

British East Africa, collected during the Roosevelt African Expedition. L. J.

Two New Species of Birds from the Slopes of Mount Pirri, Eastern Panama. By E. W. Nelson. From Smithsonian Miscellaneous Collections, Volume 60, Number 21.

Capito maculicoronatus pirrensis, Mount Pirri Barbet; and Pseudotriccus pelzelni berlepschi, Berlepsch Flycatcher. L. J.

Western Wild Life Call. Published by the California Associated Societies for the Conservation of Wild Life. February 7, 1913.

A publication of this sort, illustrating by pictures of what is now happening to our wild life, and showing what the results in the past have been when such practices have gone on unchecked, scattered over the country at large and put into the hands of sportsmen as well as others, would, in our opinion, be of the greatest service in the warfare now on to protect and conserve our wild life. We trust that the impetus which this movement in the Golden State is certain to give to the conservation of Wild Life will reach eastward across the mountains and become evident the country over. L. J.

THE BIRD MAGAZINES.

The Auk. Vol. XXX, January, 1913, No. 1. Cambridge, Mass.

The present number contains 165 pages, of which 105 are concerned with longer articles and an account of the Thirtieth Stated Meeting of the American Ornithologists Union. Four of the ten articles are based on field studies, two are concerned with the technical aspects of the study, one is biographical, one controversial, and one deals with photography. Of the twenty-six titles under the caption, "General Notes," twenty-one record extralimited occurrences of species. The other departments are treated in the usual thorough manner. L. J.

Bird-Lore. Vol. XV, No. 1, January-February, 1915. Harrisburg, Pa.

The three colored plates in this number illustrate the Snow Bunting from the brush of Louis Agassiz Fuertes, and the Hudsonian Curlew and the Ruffed Grouse by Bruce Horsfall, these under the department of the Audubon Societies. This number, according to the custom, is the Christmas Bird Census number. There are 199 lists from 187 localities. The lists come from the Atlantic to the Pacific, and from Ontario to Florida. The largest list was made by

Dawson and Brooks at Santa Barbara, California. They can beat Northern Ohio in the winter, but fall behind in May. L. J.

The Condor. Vol. XV, January-February, 1913, No. 1.

It is rarely that we are treated to such a feast of Shore Birds as we find in the first article by W. Leon Dawson, "A Glimpse of Surf-birds." The five reproductions of photographs approach perfection both from the standpoint of the photographer and the engraver. "Concealing and Revealing Coloration of Animals," by Junius Henderson, adds valuable points to this current controversy. In "Swallows and Bedbugs" Edward R. Warren shows that the swallows are not guilty of harboring the species which harrasses humans, but that it does harbor an allied species. Two articles follow relating to local distribution. In the final article Joseph Grinnell discusses at length "The Outlook for Conserving the Band-tailed Pigeon as a Game Bird of California." Interesting field notes close the number to the editorial page. L. J.

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